

CLAIMS

1. An umbrella-type folding frame (1) particularly for push-chairs and the like, comprising a pair of front upper (2a', 2b') and lower (2a, 2b) struts, a pair of rear struts (3a, 3b), a pair of support or engagement rigid members (4a, 4b) having one end thereof pivoted to a respective rear struts (3a, 3b) and its other end slidably engaged with a respective upper strut (2a', 2b') and secured to a respective lower strut (2a, 2b), at least one lock-release mechanism (45, 46) between each upper strut (2a', 2b') and its respective lower strut (2a, 2b), a lifting handle (8), an articulated connection structure (5) between said rear struts (3a, 3b), a lifting handle (8), and one driving device (9) located on said articulated structure (5) at the said lifting handle (8) and arranged to control said lock-release mechanism (45, 46), whereby the sequential effect of said driving device (9) being actuated and said lifting handle (8) being lifted causes the folding frame (1) to set from an open or extended position to a closed or collapsed position.

2. A folding frame according to claim 1, wherein said driving device (9) includes a manual actuation member (9a) arranged to move from a working to a rest position thereof.

3. A folding frame according to claim 1, wherein said driving device (9) comprises a manual actuation member (9a, 9d, 9f, 9h 80, 8d) and a motion transmission means (11; 41, 41a, 43, 44, 44a) arranged between the said manual actuation member (9a, 9d, 9f, 9h 80, 8d) and said lock/release mechanism (45, 46).

4. A folding structure as claimed in claim 1, wherein said handle (8) comprises a supporting member or portion (8a) secured to said articulated structure (5).

5. A folding frame as claimed in claim 1, wherein the said articulated structure (5) comprises a cursor member (5k) designed to slide on a rod member (60) while the folding frame is being folded or unfolded.

6. A folding frame according to claim 5, wherein the said driving device (9) comprises safety locking means (9b, 85; 13a, 87; 13c, 5a; 13c) arranged removably to secure the said lifting handle (8) to said cursor member (5k) or to said articulated structure (5).

7. A folding frame as claimed in claim 6, wherein the said locking means comprises an engaging tooth (9b) designed to engage with an opening (85) provided

in said cursor member (5k) when the said articulated structure (5) is in its extended position.

8. A folding frame as claimed in claim 6, wherein the said locking means comprises an actuation lever member (9a) having an inclined-plane surface (90) arranged to automatically engage tooth (9b) with opening (85) formed in said cursor member (5k).

9. A folding frame as claimed in claim 6, wherein the said actuation lever member (9a) comprises a notch (8c) in said lifting handle (8) and a limit member (9c) arranged to abut against said notch (8c) thereby preventing the said engagement tooth (9b) from accidentally disengaging from recess (85).

10. A folding frame as in any claim 6 to 9, characterized in that the said actuation lever member (9, 9a) comprises a loading spring.

11. A folding frame according to claim 1, wherein said lifting handle (8) comprises an oblong element (8b) carried by said articulated structure (5) and the said manual actuation member (9a) comprises a lever member articulated to said oblong element (8b) and arranged to actuate the said motion transmission means (11, 41, 41a, 43, 44, 44a).

12. A folding frame according to any previous claim 1, wherein said lifting handle (8) comprises a grip (8d) secured to said articulated structure (5) and a manual actuation member (9d) mounted for angular displacement or rotation relative to said grip (8d) and a motion transmission means (11) between said angularly displaceable grip (9d) and said at least one lock/release mechanism (45, 46).

13. A folding frame according to claim 4, wherein said handle grip (8) comprises a rotating portion pivoted to said supporting member or portion (8a) and a pulley member (80) rigid in rotation with said handle (8) and operatively connected to said motion transmission means (11, 41, 41a, 43, 44, 44a).

14. A folding frame according to any claims 1, wherein said handle (8) comprises an end T-shaped handling portion (83) and a shank portion (86) and in that it includes an annular flanged member (9f) operatively connected to one end of said motion transmission means (11) and slidably mounted on the said shank portion.

15. A folding frame as claimed in claim 14, wherein the said locking means comprises a lever member (13) having one end thereof pivoted to the said cursor member (5k) and its other end (13c) shaped as a hook, and an engaging

projecting tooth (87) that, when folding frame (1) is in its open position, is in engagement with, and retained in a recess (13a) formed in said lever member (13).

16. A folding frame according to claim 14, comprising resilient means (12) for resiliently loading said flanged member (9f).

5 17. A folding frame according to claim 1, wherein said handle (8) comprises a frame lever element (8d) secured to said articulated structure (5) and operatively connected to said motion transmission means (11).

18. A folding frame as claimed in claim 17, wherein the said locking means comprises a lever member (13) having one end thereof pivoted to the said cursor 10 member (5k) and its upper end formed with an engaging tooth (13c) arranged to engage with an extension of said articulated structure (5).

19. A folding frame as claimed in claim 18, wherein the said lever member (13) has the said other end at least partly shaped as an inclined plane surface thereby causing the said engaging tooth (13c) automatically to engage with said 15 extension.

20. A folding frame as claimed in claim 17, wherein the said lever member (13) is shaped as a bell crank and is pivoted to the said frame handle (8d), one arm (13d) of said lever member (13) being formed with said tooth (13c) designed to engage with a respective recess (85) provided in said cursor member (5k), 20 whereas the other arm (13e) extends at an angle with respect to said arm (13d) towards the said support block (8a).

21. A folding frame as claimed in claim 20, wherein the said bell crank (13) is spring biased by a spring (101).

22. A folding frame according to claim 1, wherein said motion transmission 25 means comprises at least one cable (11), at least one lever member (41) designed to be actuated by said driving device (9) through the at least one cable (11), at least one engagement member (43) arranged to be actuated by the said or by a respective lever member (41), at least one rod member (44) slidably carried by a respective upper strut (2a', 2b') and supporting the said or a respective engagement 30 member (43), whereby actuating the said lock-release mechanism (45, 46).

23. A folding frame according to claim 22, wherein said at least one cable (11) is a sheathed cable.

24. A folding frame according to any previous claim 22 or 23, characterised in that said motion transmission means (11) comprises at least one strut component (44).

25. A folding frame according to claim 24, characterised in that said strut component (44) comprises at least one stay bar.

26. A folding frame according to any previous claim 23 to 25, characterised in that said motion transmission means (11) comprises an electrically driven motion transmission means.

27. A folding frame according to any previous claim 23 to 25, characterised in that said motion transmission means (11) comprises fluid-operated motion transmission means.

28. A folding frame according to any previous claim, characterised in that the said at least one lock/release mechanism comprises at least one resiliently loaded control member (44) operatively connected to and controlled by said motion transmission means (11).

29. A folding frame according to any previous claim, characterised in that the said at least one lock/release mechanism (44, 45) comprises an electromechanical control system.